

METHODS AND APPARATUS FOR PROCESSING MICROFEATURE  
WORKPIECES; METHODS FOR CONDITIONING ALD REACTION CHAMBERS

ABSTRACT

The present disclosure provides methods and apparatus that may be used to process microfeature workpieces, e.g., semiconductor wafers. Some aspects have particular utility in depositing TiN in a batch process. One implementation involves pretreating a surface of a process chamber by contemporaneously introducing first and second pretreatment precursors (e.g.,  $\text{TiCl}_4$  and  $\text{NH}_3$ ) to deposit a pretreatment material on a the chamber surface. After the pretreatment, the first microfeature workpiece may be placed in the chamber and TiN may be deposited on the microfeature workpiece by alternately introducing quantities of first and second deposition precursors.